

An Analytical Study Of Water Production, Demand, Supply And Water Crisis In Jaipur City

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Abstract The level of groundwater in Rajasthan is decreasing in the last few years, due to rapid increase in population, the state is facing water problem. In the last few years, the population of Jaipur city is increasing rapidly, due to which there is a sharp decrease in drinking water. The total water supply in the city is 6300 lakh liters, while the demand for water is 7000 lakh liters. More demand has been told than is happening, so the purpose of this part is to assess the distribution of existing water sources and production, and present a comparative study of production and demand, about the water crisis, so that the existing water resources of the city development authority are optimized. and strives to operate.

Introduction

Our ancestors have understood the usefulness and importance of water since ancient times, water has been the driving force of every civilization. Nations rise from water, and in its absence, empires can fall. Water is the property of nature without which life is not possible. Regarding water, Rahim Das ji says – “Rahiman Pani Rakhiye, Bin Pani Sab Soon” i.e., life begins to end only due to lack of water, history is witness that most of the ancient civilizations of the world were born on the banks of rivers. Analyzing the total water on earth shows that 97.3 percent of the total water is salt water and only 2.07 percent of the total water available on earth is pure water which is considered potable, according to the report of World Resources, more than two billion of the world's Most of the population is not getting clean water to drink. The world's 1.1 billion population is not getting enough water, that is, out of every six people Suffers from a water crisis. Out of the total water amount 1.5 billion km, only 12500 to 14000 billion liters of

water is available for human use every year. There are more than 26 countries where more than 240 million population of the world lives in which water supply per capita per year is less than 100 cubic meters such as in Asia 8.5 liters per person per day, Africa 47 liters, USA. The United States receives 587 liters of water, which is much more than in Asia and Africa. The Middle East of Asia, most of North Africa, Pakistan, Turkey, Afghanistan and Spain, etc., will face water crisis by 2040. most affected by water crisis There are 17 countries as well as water supply to other countries including India, China, South Africa, America, Australia. will face crisis

India has been hit by a severe drought of 330 million people or nearly a quarter of the country's population due to two consecutive years of weak monsoon. About 50 percent of the area in India, especially in the western and southern states, is facing a serious water crisis. According to the Composite Water Management Index report released in 2018, about 100 million people living in 21 major cities of the country are facing the

problem of water crisis. 12% of India's population is already living in day zero conditions. In the year 1944, the availability of water per person was 6000 cubic meters, which was 2300 in the year 2000.cubic meter and by 2025 it will come down to 1600 deep meters. On hearing the name of Rajasthan, the image of the desert comes to the fore. Rajasthan is facing the biggest shortage of water resources in the country. Thus, Rajasthan is a state which has 10 percent land area and 1.1 percent water resources (as per the report, 2018) but it has only surface water 1.16 percent and groundwater 1.70 percent, out of which 83 percent water use in agriculture is 11 percent in drinking water. And it is 6 percent in industrial and other uses. Necessary water resources are available according to the demand and supply of water, because water resources are limited, so the availability of water per capita in Rajasthan is less than in India. There is a substantial gap between the demand and supply of water in the state. The availability of water in the year 2005 was 32.4 billion cubic meters while the demand was 40.1 billion cubic metres . With the increase in the demand for water, domestic consumption is also increasing here, due to which it is estimated that by 2045, the availability of water in the state will be up to 477 billion cubic meters.

Jaipur's water supply is more than 100 years old. Initially the supply of water was increased on the basis of local wells and water sources. In 1952, 8.70 MLD of water was produced from Ramgarh dam by ground source, later in the end of 60s it was increased to 27 MLD by surface water, tube well, boring, tube well. In 1982, due to the complete drying of the dam, Ramgarh produced 45 MLD of water for the last time. In 2006, Bisalpur water source was constructed 136 km away from the city. More about this source text Source text required for additional translation information Send feedback Side panels

Due to the increase in water production, the people of Jaipur became completely dependent on the water of Bisalpur Dam.

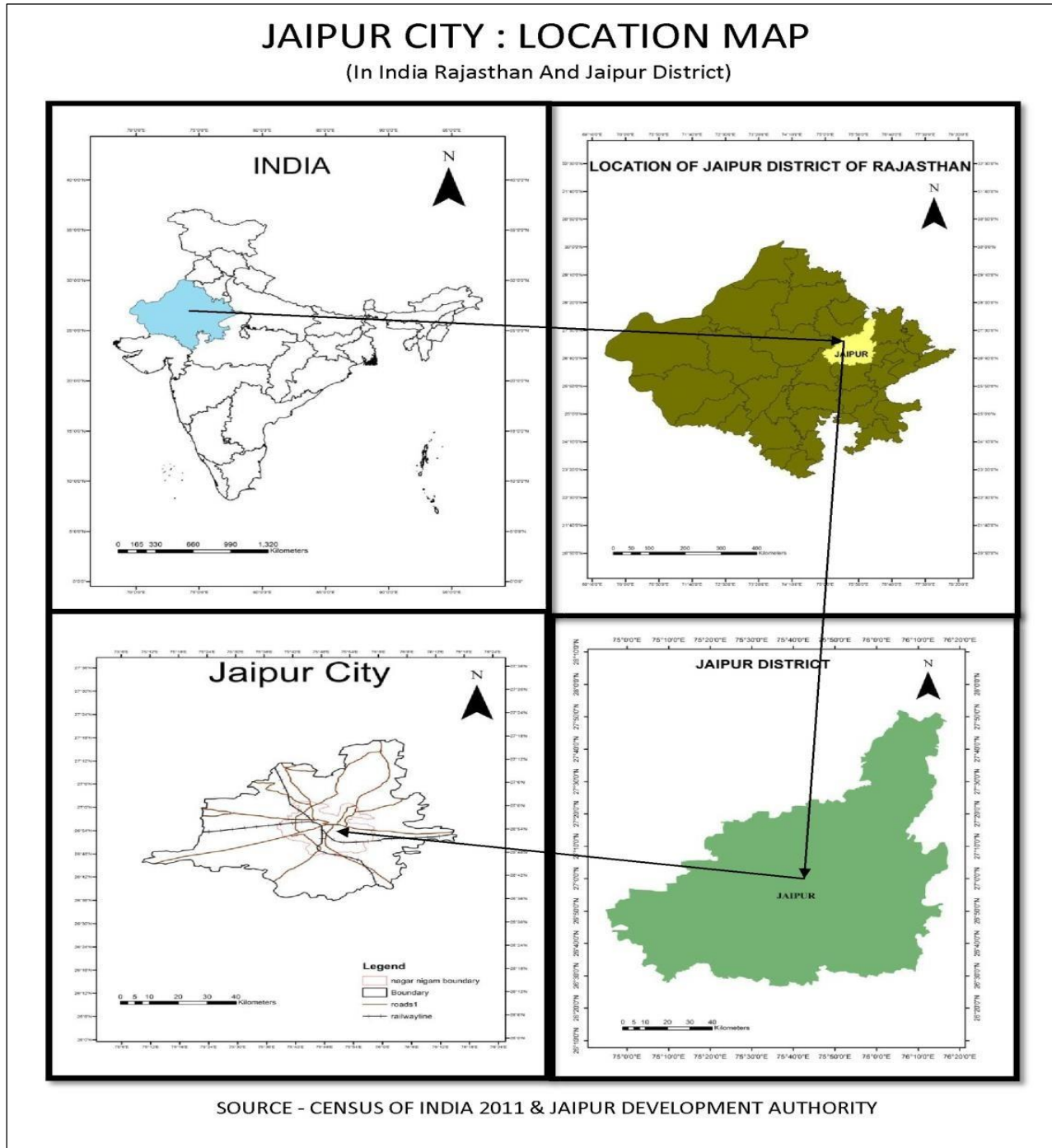
Objectives of the study;

The purpose of this study is to evaluate all the facts of water supply of Jaipur city. The objectives of this study are as follows -

- To study the production and distribution through the sources of water supply in the city of Jaipur.
- Comparative study of production and demand of water supply in Jaipur city.
- To study the water crisis situation in Jaipur city.

Study Area - Jaipur, the capital of the state of Rajasthan, is one of the well-planned cities of its state. The city of Jaipur was founded by Raja Sawai Jai Singh II of Amber on 18 November 1722, who moved 22 km from his capital city Amber to accommodate the growing population. The plan to shift the city of Jaipur away was done under the guidance of Vidyadhar Bhattacharya. The city of Jaipur is located at 26°55' North Latitude and 75°49' East Longitude. Its city limits extend from 26 degree 46 minutes north latitude to 27 degree 01 north latitude and 75 degree 37 east longitude to 76 degree 57 minutes east longitude. The city is surrounded by Nahar garh hills in the north and Jhalana in the east which is part of the Aravalli hills. The south and west of the city is open to the prevailing hills and plains. It is situated at an altitude of 1417 feet above sea level. The city of Jaipur is located in the semi-arid region of India. It is characterized by high temperature, low rainfall, mild winters. The average temperature in Jaipur is 36° C. Which ranges from 18°C in winter to 40°C in summer. Thus January and June are the most More about this source text Source text required for additional translation information Send feedback Side panels. . There are cold and hot months. The

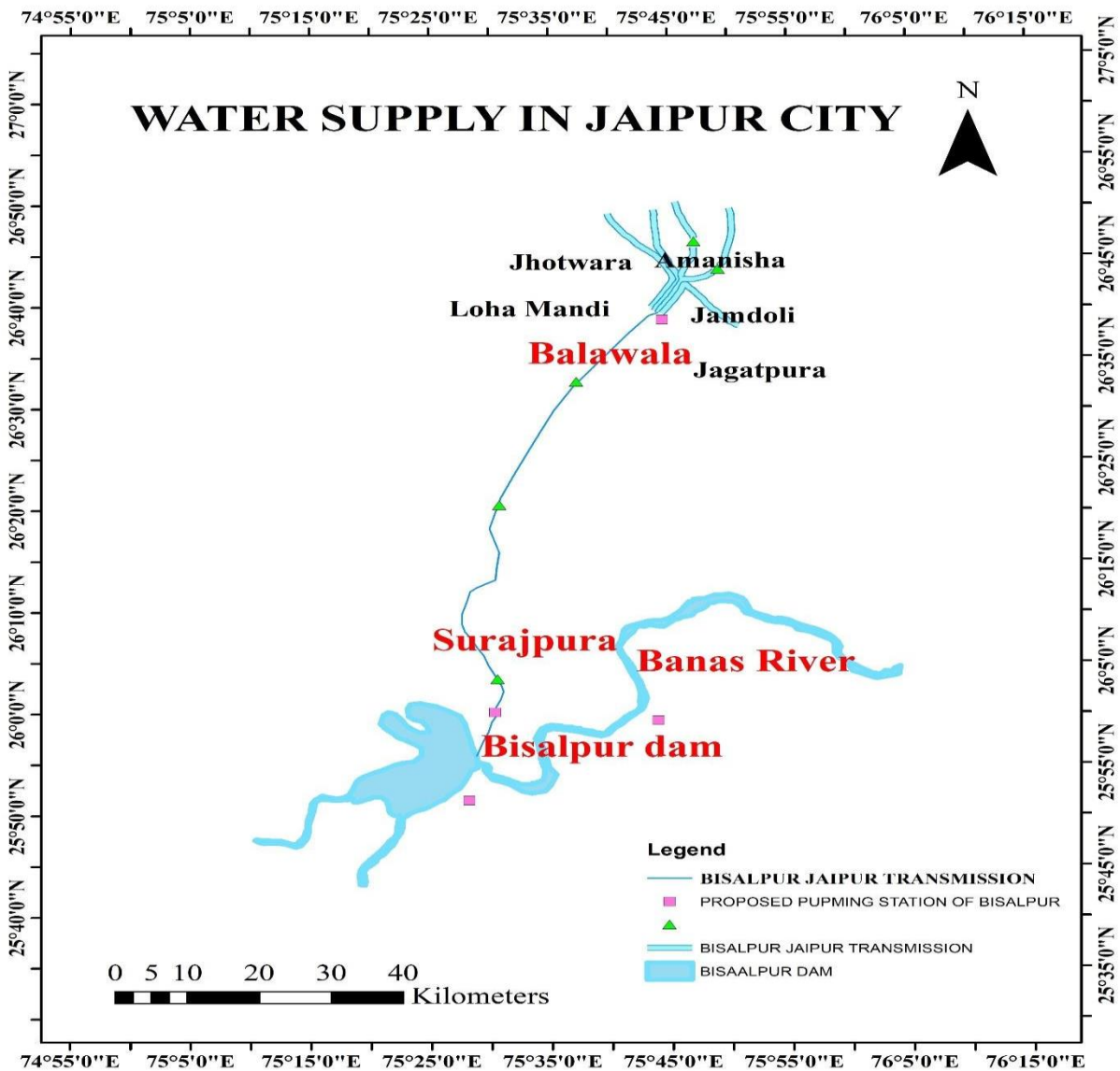
normal rainfall in Jaipur is up to 600 mm. According to the 2011 census, the total population of Jaipur is 30,46163.



Out of which 1,603,125 are males and 1,443,038 are females. Literacy rate is 969, sex ratio is 900, child sex ratio is 855.

Research Methodology - In this chapter, the study of production, demand and supply of water supply of Jaipur city will be obtained from the second data, which is based on the Ph.D. of the

city.) has been taken from Public Health Engineering Department. These data can be translated into appropriate diagrams (bar diagrams, line diagrams, graphs) and maps.(alphabet map) etc. and will be used for mapping. Yes. (ARC GIS 10.4.1) and the following statistical methods to analyze the data SPSS (software will also be used.



Source-Public Health Engineering Department Office(PHED), Jaipur

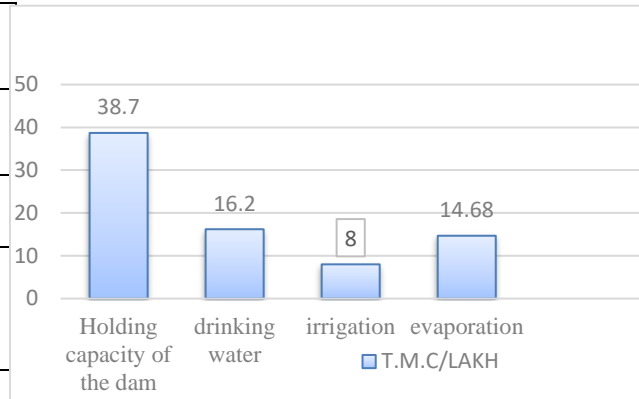
Rajasthan 2022

Analysis of results and suggestions –

Present water supply of Jaipur city –

In this study, there is a study of production, demand and supply of water supply of Jaipur city. Water supply in Jaipur city is done by both

Holding capacity of the dam	38.07 TMC
drinking water	16.2 TMC
Irrigation	8 TMC
Evaporation	14.68 TMC



Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022

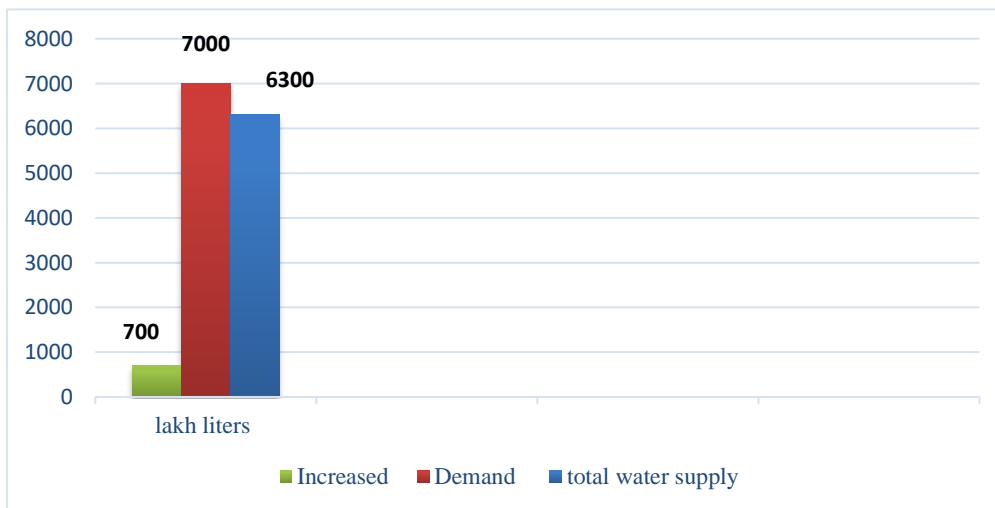
water is given The water holding capacity of the dam is 38.07 TMC. 16.2 TMC of water in the dam is reserved for drinking water, out of which 8 TMC is reserved for irrigation. 14. 68 TMC is used as evaporation .The city is supplied with 6300 lakh liters of water daily, out of which 4650 lakh liters and 1700 lakh liters of groundwater are

ground water source (tube well) and surface water (Bisalpur dam) which is maintained by PHED. The main source of water supply in the city is the Bisalpur dam on the Banas river which is 110 km away from the city. Apart from this, the dam connects Ajmer, Tok, Malpura, Jairana and Dausa..

being exploited from the Bisalpur project. is linked to

Difference between demand and production

The total water supply in the present city is 6300 lakh liters while the demand is 7000 lakh liters, so the water supply should be increased to about 700 lakh liters so that all the people can get enough water.



Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022 Jaipu2022

Water supply started from the dam in 2010, then the water supply of 50 lakh people of 1900

villages of Jaipur, Ajmer and Tonk was started by this dam. The water level of the dam was 314.19 RL till the summer of 2013. The water level of the dam was 309.73. RL meter was left due to which the total water produced by the dam was 330 MLD and the demand was 331 MLD,

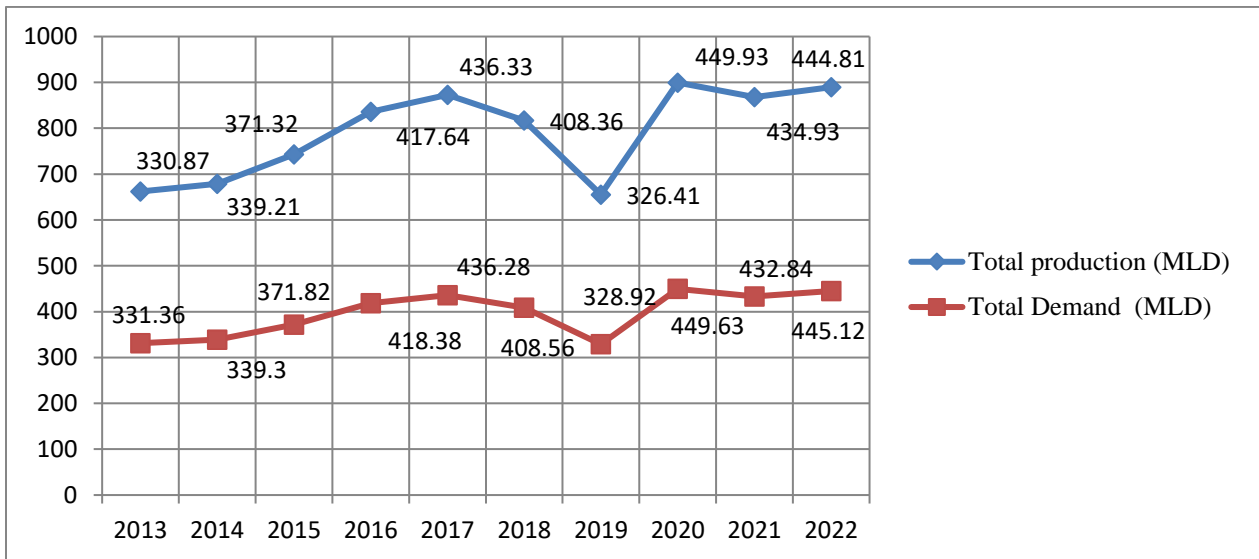
Total water supply	6300 lakh liters
Demand	7000 lakh liters
Deference	700 lakh liters

Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022 Jaipu2022

mainly due to the water filling capacity work in the dam, but from 2014 to 2017 the full water filling capacity in the dam was more. less demand and more production.

production of water was 326 MLD and the demand for water was 328 MLD, due to which the water level there was 99.85 percent due to the reduction of water production by 0.73 MLD. When the situation of crisis started to arise, then the water supply in the city was filled with 730 tube wells by connecting them with the old tube wells which are operated by (Clean Water Revival) and the areas where there are no tubewells due to the decrease in groundwater level.

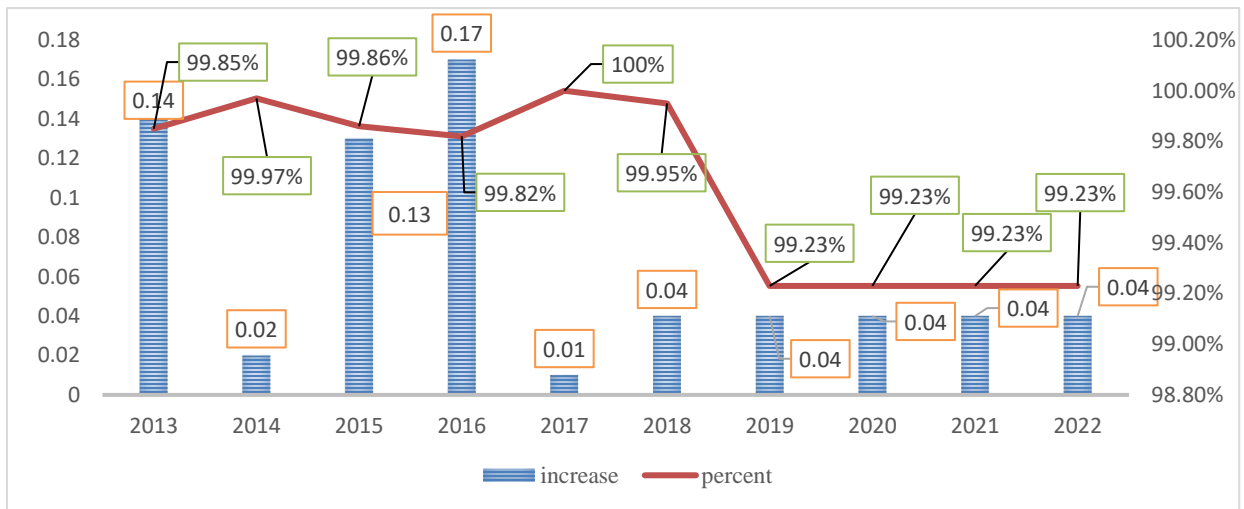
In 2018, due to the sudden drop of 30450 RL meter of water filling capacity of the dam, the



Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022 Jaipu2022

Year	Total Production(MLD)	Total Demand(MLD)	Percentage	Decrease
2013	330-87	331-36	99-85	0-49
2014	339-21	339-30	99-97	0-02
2015	371-32	371-82	99-86	0-13
2016	417-64	418-38	99-82	0-17
2017	436-33	436-28	100	0-01
2018	408-36	408-56	99-95	0-04
2019	326-41	328-92	99-23	0-76
2020	449-93	449-63	100	0-06
2021	434-93	432-84	100	0-48
2022	444-81	445-12	99	0-06

Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022 Jaipu2022



Source-Public Health Engineering Department Office(PHED), Jaipur Rajasthan 2022 Jaipu2022

Those areas were being supplied from Bisalpur . At the end of July 2019, the dam became overfull due to the dam's water holding capacity of 315.50 RL meters indicating increase in water production and decrease in demand. 9 lakh population of 2800 villages were added by the

dam in 2020, at present water supply of 1.10 crore people of 3000 villages is being done by this dam, every year around 12 TMC supplies water through the dam. And the main difference in demand is not due to population increase or decrease, the water filling capacity of the dam is considered, as well as limited quantity of water is supplied from the dam in summer by the water supply department because of the dam in

summer. Water evaporates in large quantities in the form of steam.

Conclusion - On the basis of this research, it has been found that there is a serious problem of drinking water in Jaipur city. . Therefore, in 2009, Bisalpur surface water source has been constructed in Tokan district, 106 km south of the city. Due to which 4650 lakh liters of water from Bisalpur dam and 1700 lakh liters of ground water are supplied to the city. At present, 1700 lakh liters of ground water is being exploited in the city from about 3252 tube wells. Out of which 1400 tubewells are associated with Bisalpur project. The total water supply in the city is 6300 lakh liters while the demand is 7000 lakh liters (Public Health Engineering Department, Public Health Engineering Department 2022). Due to which the main reason for the difference in production and demand of water is not population growth, but the water filling capacity in the dam has been considered, as well as due to excessive flow of water of the dam in winter, it is cut by the water supply department. Due to which the problem of water crisis arises in the city.

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